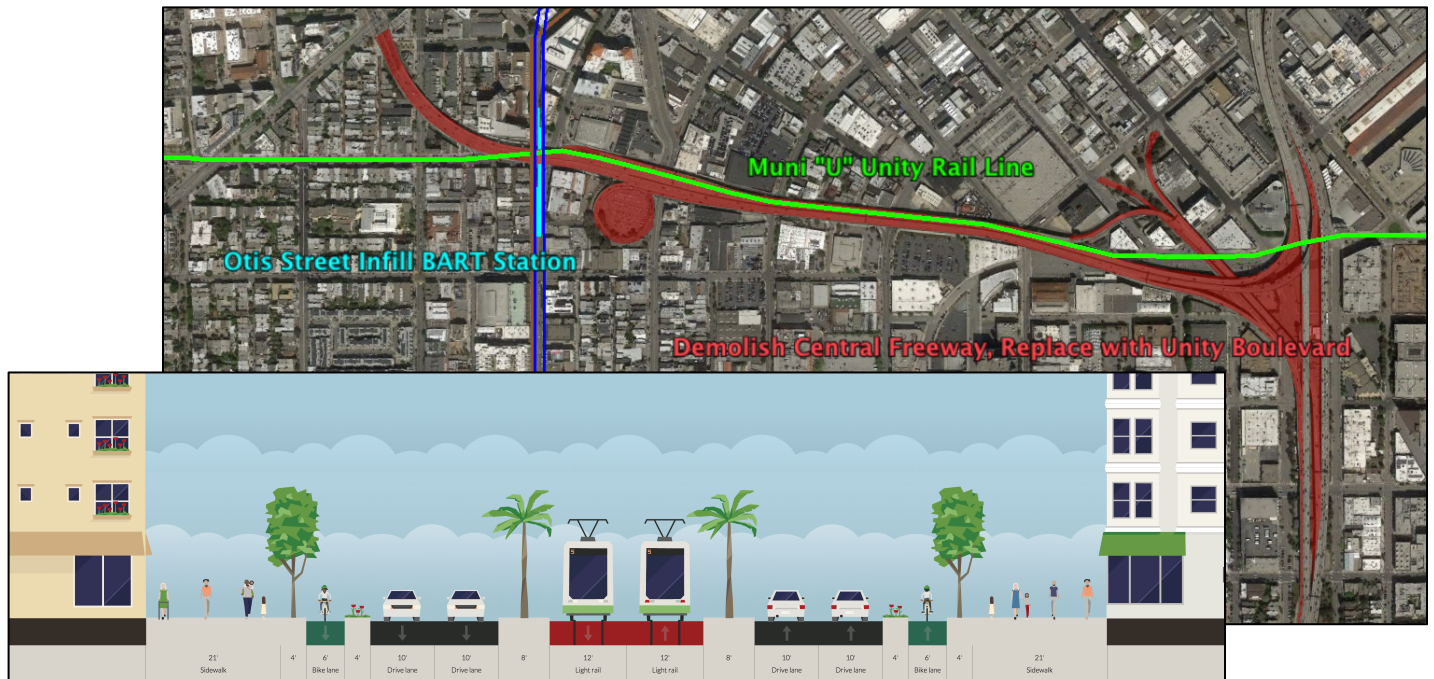


Core Capacity: Local San Francisco Solution

Unity Boulevard and Otis Street BART



By Greg Riessen, Bay Area resident

Unity Boulevard is a proposal to substantially increase the capacity and reliability of the local rail transit network into downtown San Francisco with minimal new track construction, while also delivering major land use, environmental and placemaking benefits to the South of Market and Mission neighborhoods.

The project would link the existing N Judah surface tracks along Duboce Street into a new infill BART station under Otis Street, enabling many more local transit passengers to be carried. This link would also create a new rail alignment parallel to Market Street, improving the reliability and resiliency of the entire Muni Metro network.

The project would demolish the elevated Central Freeway stub viaduct in totality (from the intersection of Market/Octavia to the US-101 mainline) and replace it with a surface boulevard essentially identical in design to the Embarcadero, including an exclusive median for light rail transit, protected bikeways and wide sidewalks accessing ground-floor retail. The street underneath the current viaduct, which is now appropriately named Division Street, would be rechristened as Unity Boulevard, recognizing that the old freeway divided the community while the new boulevard unites it.

The project would combine a long-sought freeway removal with a Muni rail network expansion, an infill BART station, and the intensification of adjacent land uses. This package would comprehensively shift existing and new trips out of cars and onto sustainable modes while also repairing divided communities and creating vibrant new places. By capturing value from upzoned parcels along the corridor, the project could fund itself.

Otis Street BART Infill Station

The project would construct a new BART infill station under Otis Street, between Gough and Division streets, see Figure 2. This station location is feasible per BART's Civil Trackway Standards, which specify that stations should be located on track with a maximum slope of 1%, which this location would meet. Furthermore, the Standards stipulate that platform tracks should be tangent, including at least 100' of tangent track between a platform and the beginning of a horizontal curve.

The existing tracks transition from the Mission/Otis Street alignment to the Market Street alignment with a curve of 49 degrees, a minimum radius of 1800', and a design speed of 65 miles per hour. Both ends of the curve have spiral transitions. The start of the northbound spiral curve, and the adjacent end of the southbound spiral curve, are located approximately 300' south of the Otis/McCoppin intersection.

Strictly adhering to all of BART's criteria would result in the proposed Otis Street infill station being located approximately 1630' north of the existing 16th Street station (from platform start to platform start). This compares with a distance of approximately 1790' between the existing Embarcadero and Montgomery stations. This infill station location would result in the new station platform being approximately centered on Unity Boulevard.

If BART staff could grant exceptions to these criteria, then a more ideal station location could be realized approximately 400' to the north, so that the north end of the platform would be at the Otis/McCoppin intersection. This station location would be at the midpoint between the Civic Center and 16th Street stations. If the station were located here, the northern 3 cars of a 10-car train would be stopped on the existing spiral curve tracks. Because the tracks at this location are the spirals approaching a high-speed curve, the radius is very large and should therefore not materially affect station operations; the smallest radius, at the northern end of the platform, would be approximately 3500'.

In a worst-case scenario, BART staff would require strict adherence to their criteria, and would also require that the distance between the new infill station and the existing 16th Street station be no less than the distance between Embarcadero and Montgomery stations. In this case, the infill station would be centered on Division Street, and the 16th Street platform would need to be shifted about 160' to the south. Only the 16th Street platform would require shifting; the station's vertical circulation, mezzanine, and associated elements would not require relocation.

The Otis Street BART station would not affect any nearby structures, because the project area (including vertical circulation elements) would be entirely within the Otis Street right of way. The construction would be cut-and-cover and could be completed without prolonged disruption to BART daytime operations, because no track connections or tunnel realignments would be required.

Muni Metro “U” Unity: A New Downtown Transit Corridor

A new transit corridor from the Sunset to downtown would be created by connecting the segments of the N Judah and the BART corridor that have excess capacity. This new route would require only minimal new track construction, resulting in a very cost effective transit solution, see Figure 2.

During peak periods, the N Judah operates with seven-minute headways. The surface tracks in the Sunset (including the Sunset Tunnel) could carry about twice as many trains, except that there are no available slots to receive those trains in the Market Street subway. Meanwhile, BART trains traveling between downtown San Francisco and the Mission District have additional capacity for passengers (BART’s most crowded segment is the Transbay corridor).

By linking the Judah streetcar tracks into the new Otis Street BART station without using the oversaturated Market Street subway, a new local transit corridor from the Sunset to downtown would be created that is nearly as direct as the existing Market Street subway. A passenger on Judah Street that is heading to downtown San Francisco would simply board the first train that arrived: if it were an N train, he would board that train directly to downtown; if it was a U train, he would board that train and ride it to Otis Street where he would transfer onto BART to continue his journey to downtown.

New surface tracks would be built through the existing minor Muni railyard at Market/Duboce and along the existing bikeway. Bicycles and trains would share the lane, with eastbound bikes/trains proceeding south of the existing subway portal (along the existing bidirectional bikeway) and westbound bikes/trains proceeding north of the existing subway portal (along the existing storage tracks). To prevent bicycle wheels from getting caught in the streetcar tracks, the tracks could be furnished with VeloStrail, a rubber filling material inserted within the track flange groove.

The new tracks would continue east, remaining at grade, across Market and down Duboce. The grade of Duboce Street between Valencia and Guerrero is 8.75%, which is below the maximum of 9% for Muni rail operation. Immediately west of Guerrero, the grade of Duboce is over 10% before leveling immediately east of Market Street; this block would need to be regraded in order to achieve a uniform grade of less than 9%.

The tracks would continue east along Duboce/Division in the median of Unity Boulevard. At King Street, the tracks would rise up onto a bridge in order to fly over 7th Street and the existing Caltrain tracks, and then return to the surface east of the Caltrain tracks. This bridge is necessary to avoid an at-grade Caltrain/LRV crossing. When the Railyard Boulevard project reconstructs the Caltrain tracks underground at this location, this LRV bridge would remain in place and would fly over the new Railyard Boulevard roadway.

The LRV tracks would connect with the existing tracks along King Street at 5th Street. The U would continue east and then north along the Embarcadero to the Ferry Building and Fisherman’s Wharf, providing additional train capacity along the waterfront.

New Boulevard and Auto Circulation

The elevated Central Freeway would be demolished from Market Street to the US 101 mainline, see Figure 1. It would be replaced with a new 150' wide boulevard, including two auto travel lanes in each direction, a wide median with exclusive LRV lanes, protected bikeways, wide sidewalks and on-street loading bays where necessary, see Figure 2.

Figure 5 depicts vehicular circulation. At the western end at Market/Octavia, the new Unity Boulevard would connect with the existing Octavia Boulevard. At the northeast end, Unity Boulevard would connect with I-80 via the 8th Street on- and off-ramps (via the existing Harrison/Bryant one-way couplet). At the southeast end, Unity Boulevard would connect with US 101 via the existing Vermont Street northbound off-ramp and a new southbound on-ramp at 17th/San Bruno. These ramps would connect to Unity Boulevard by extending one-way northbound Vermont Street further north to Unity Boulevard, and by converting San Bruno Street to one-way southbound between Unity Boulevard and 17th Street.

The Unity Boulevard project would not only remove blighting auto infrastructure, but would also create new sustainable travel options. Combining a freeway removal with a rail network expansion is a winning combination to achieve mode shift, as has been demonstrated with the celebrated Embarcadero freeway removal project.

Rerouted J Church Line and Benefits for Market Street

The J Church route would be relocated out of the Market Street Subway and onto Unity Boulevard, see Figure 2. This would free up slots in the subway for longer and higher priority trains, such as the M Oceanview and West Portal Shuttle. The rerouted J would provide new direct service between Noe Valley and SOMA, while access from Noe Valley to downtown would be maintained via a transfer to BART at the new Otis St station.

With an increase in Muni Metro subway passenger capacity due to replacing low-capacity J trains with high-capacity M trains, it would become more feasible to reconfigure transit along Market Street, relying more on the subway and less on surface buses. If buses could be reduced in frequency on Market Street (or rerouted onto Mission Street), it would be possible to consolidate bus service in the two center lanes, leaving the two curb lanes exclusively available for bicycle circulation. This would be the most cost effective solution for the Better Market Street project to deliver improved bike facilities without having to sacrifice the wide sidewalks.

Van Ness Bus Rapid Transit Connection

The Van Ness Avenue Bus Rapid Transit (BRT) project will break ground in 2016 with revenue service beginning in 2018. This two-mile project will enhance transit speed and reliability between Mission Street and Lombard Street. Unfortunately the alignment will not connect with BART because there is no BART station at Van Ness Avenue.

The Unity Boulevard project would fix this limitation by continuing the BRT project one additional block to connect into the new Otis Street BART station, see Figure 2. This would shorten the connection between BART and Van Ness BRT by half a mile in each direction, including through four intersections; this would substantially reduce total travel time for passengers using both modes.

Open Space Opportunities: Otis Street Linear Park and South Van Ness Promenade

The Unity Boulevard project would dramatically reduce the volume of traffic that is carried on South Van Ness Avenue between Market and Division streets. Taking advantage of this, this section of South Van Ness would become new pedestrian promenade, with one lane of traffic in each direction for local access only.

Similarly, the two-block stretch of Otis Street (between Mission/12th and Mission/Division) could become a linear park, car-free except for dedicated transit lanes for the Van Ness BRT extension and local access. The Otis Street BART station would be underground, but with the removal of auto traffic from Otis Street, would be an open-air station similar to Balboa Park.

Optional BART Turnback / Storage Track

BART staff have expressed their desire to construct a new track facility in San Francisco that would enable “shortline” operation of trains from the East Bay only to downtown San Francisco and then turning around, without serving the Mission District or other points south. This could enable BART to better serve its most congested segment, the Transbay corridor. Or, the new track facility could serve as a location where a disabled train could be temporarily stored during peak periods (rather than the current need to shuttle a disabled train all the way to a remote railyard); this would improve BART’s operational flexibility.

If BART staff decided to pursue a turnback track, the Unity Boulevard project would present an opportunity to construct that turnback in the ideal location. It would be constructed either between the new Otis Street and existing 16th Street stations (as shown in figures 2 and 5), or if there was not sufficient length in this location, it could be built immediately south of the 16th Street station.

Soft Sites and Value Capture

There are many soft sites in the project vicinity, see Figure 6. Red parcels are potential soft sites, while orange and pink parcels are City-owned and State-owned parcels, respectively. These parcels could be upzoned for high-density housing and also imposed with an impact fee and/or Mello Roos assessment to fund the Unity Boulevard project. (This soft-site analysis is preliminary, based on aerial photos; it is not an actual soft-site survey.)

Conclusion

Like the Embarcadero freeway removal project, the northern Central Freeway removal project in Hayes Valley has generally been considered a success, except for two key differences: (1) only the northern segment of the Central Freeway viaduct (north of Market Street) was removed, rather than the entire structure, leaving the southern segment in continued blight; and (2) no new rail transit facilities were implemented as part of the project to carry the person trips that were formerly on the freeway, leading to a smaller mode shift than would have occurred, which has led to recurring auto congestion on residential streets in Hayes Valley.

The Unity Boulevard project would cost-effectively address these two shortcomings, finishing the job of the viaduct removal while creating new and expanded transit access from western neighborhoods to the South of Market and downtown San Francisco.



Figure 1: Central Freeway removal. The elevated freeway from Market/Octavia to the US-101 mainline would be demolished and replaced with a surface boulevard.

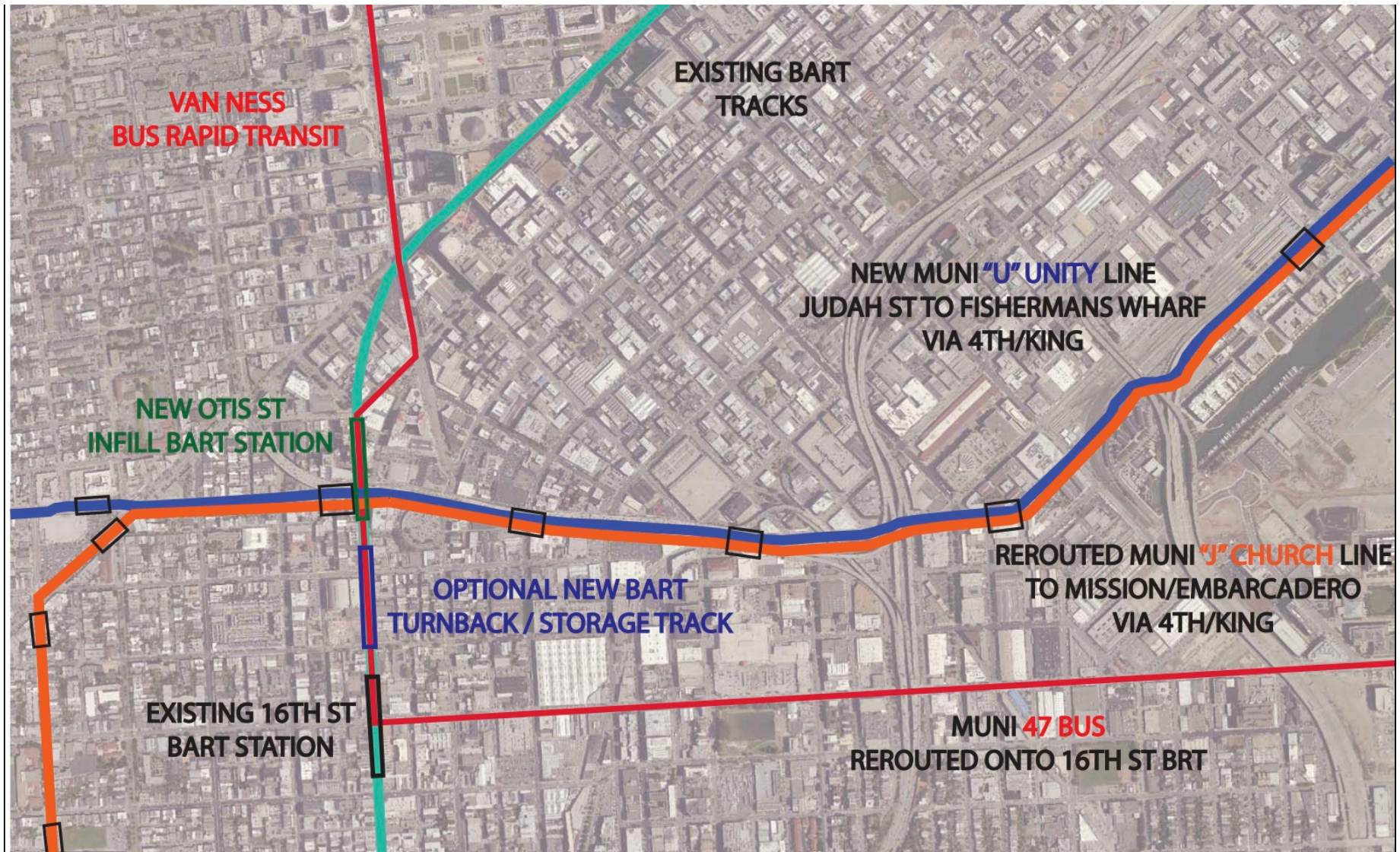


Figure 2: Transit lines. Under the Unity Boulevard project, new surface light rail tracks along the boulevard would enable a new **rail** line, the “U”, to utilize the N Judah tracks in the Sunset without entering the congested Market Street subway. Instead, the U would remain at the surface, cross Market Street, and proceed east along the new Unity Boulevard, connecting to the existing tracks on King Street and continuing north on the Embarcadero to the Ferry Building and Fisherman’s Wharf. The U would connect to BART at a new infill station under Otis Street. The existing J Church would also be rerouted out of the subway and onto Unity Boulevard, freeing up slots in the subway for higher priority trains like the M Oceanview. The 47 Van Ness BRT would also connect to Unity Boulevard and Otis Street BART and then continue along the new 16th Street BRT alignment to Mission Bay. Optionally, a BART turnback and storage track could be constructed.

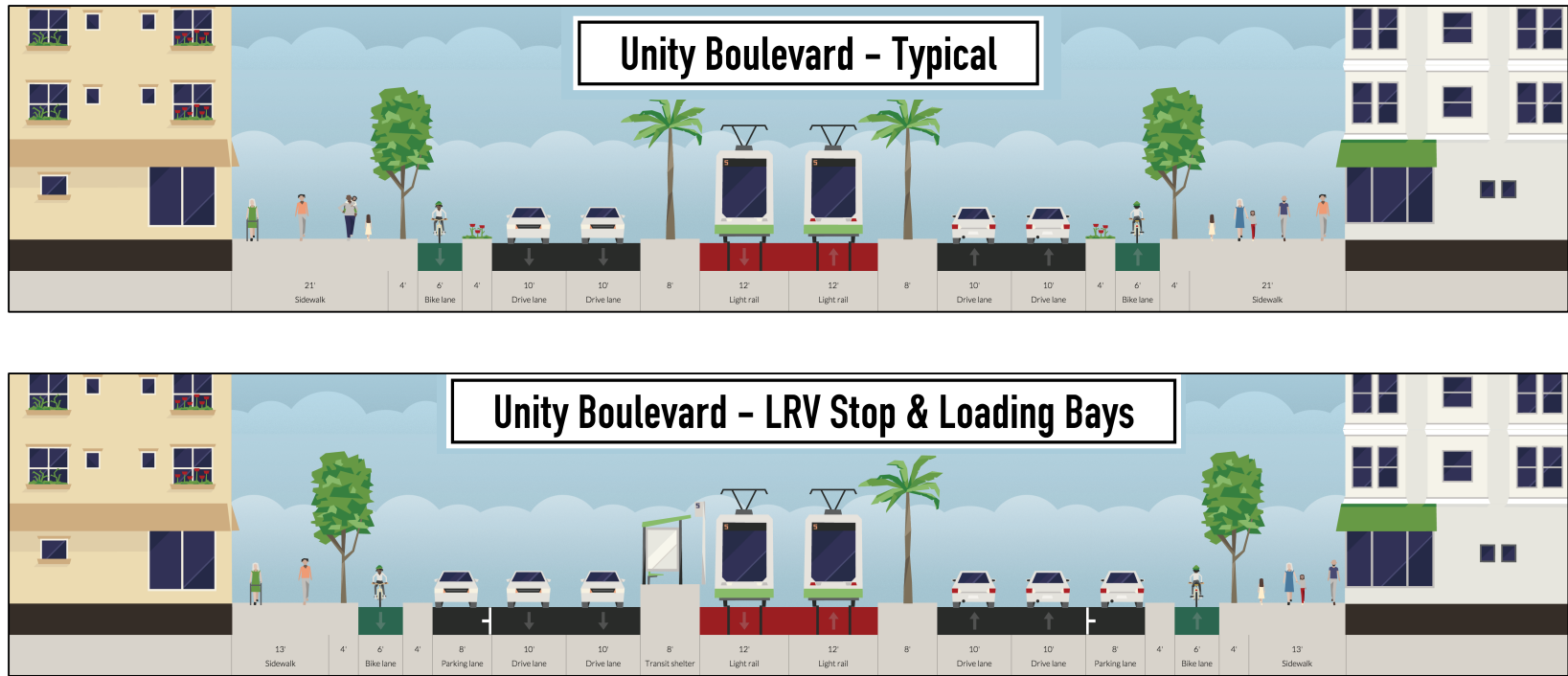


Figure 3: Unity Boulevard cross section. There would be two lanes of auto traffic and one dedicated LRV lane in each direction, in addition to a median promenade and bike path. On-street loading would be accommodated with loading bays.

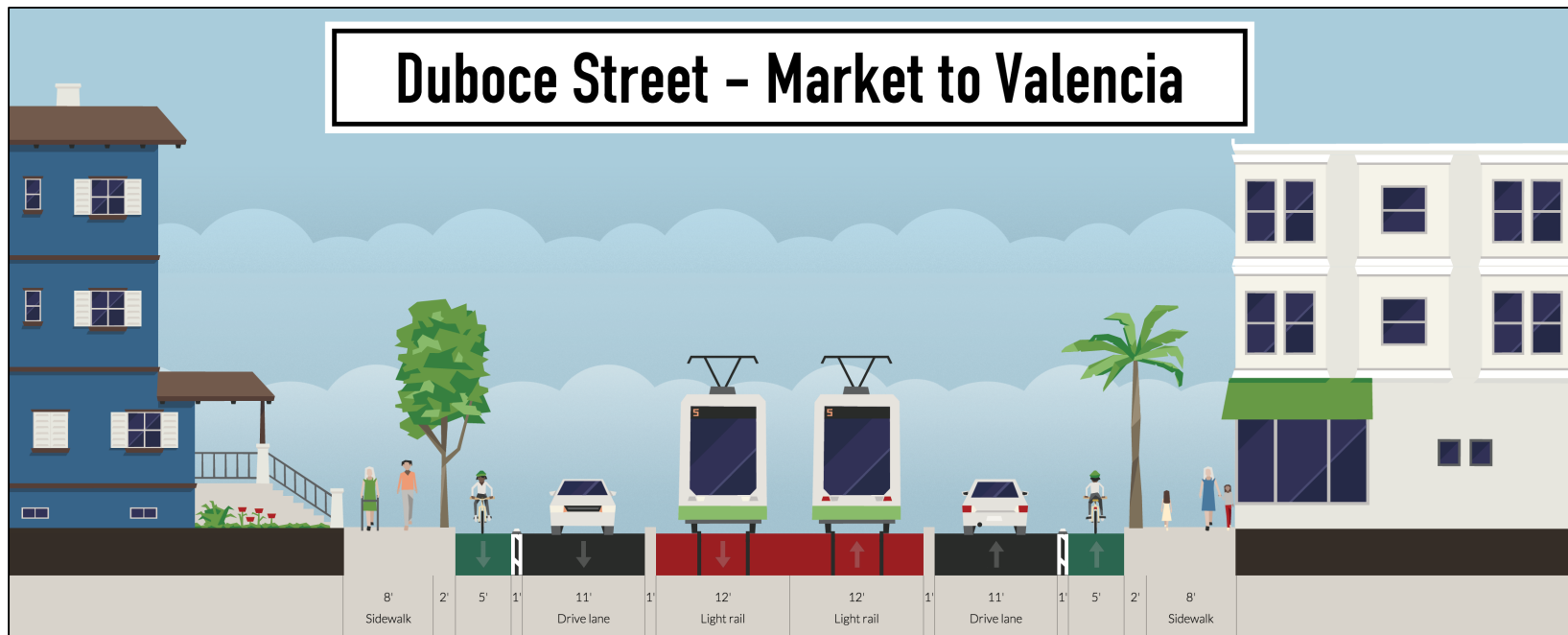


Figure 4: Duboce Street cross section. Duboce Street between Market and Valencia would not be reconstructed as a boulevard, but it would be reconfigured with streetcar tracks, bike lanes and reduced traffic volumes.

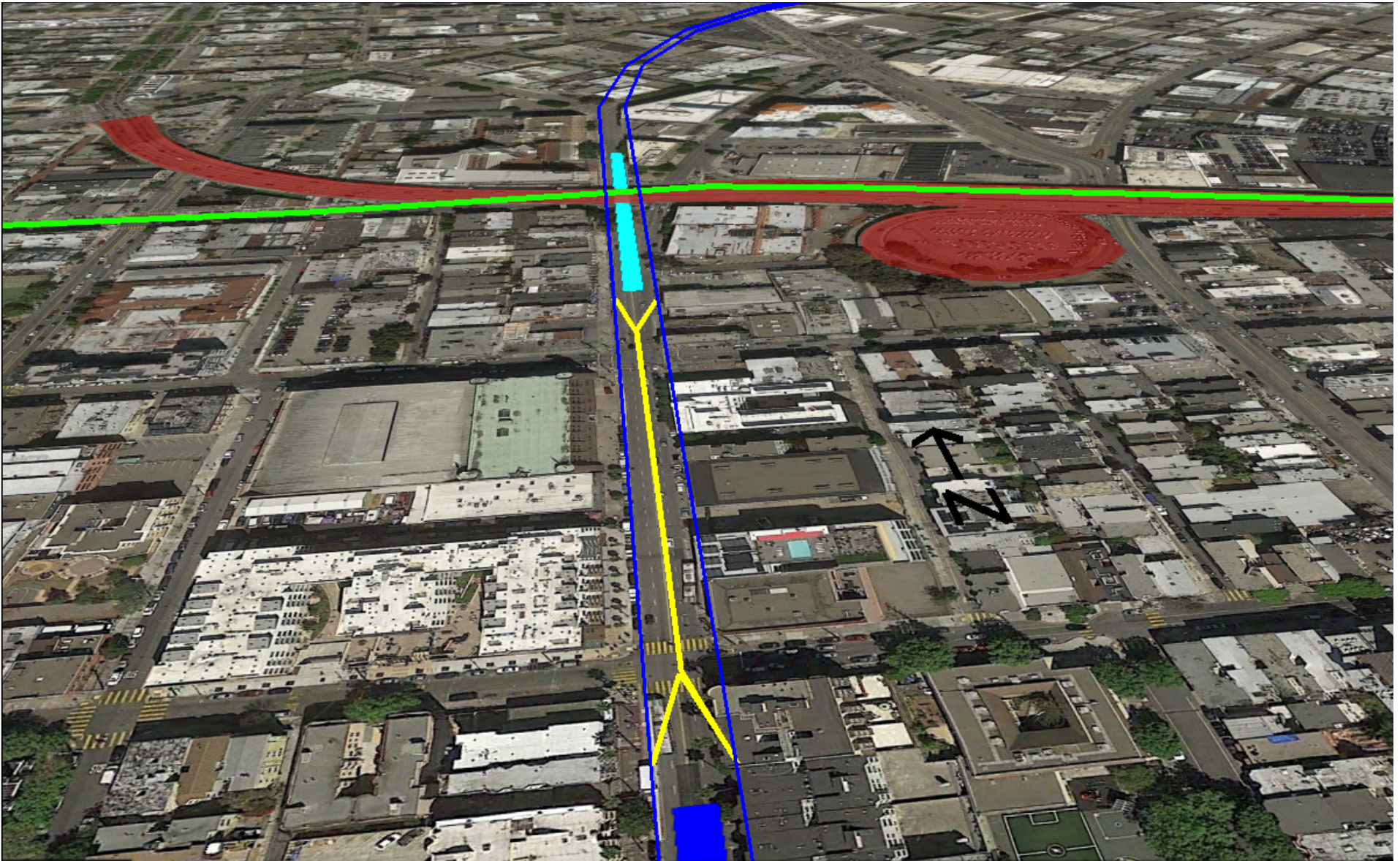


Figure 5: Otis Street infill BART station and optional turnback/storage track. Existing BART tracks and existing 16th Street station (foreground) are shown in blue. The new Otis Street infill station center platform is cyan (background) and the optional new BART turnback and storage track is yellow. New Muni “U” LRV line is green, which runs along the alignment of the demolished Central Freeway and new Unity Boulevard, shown in red.

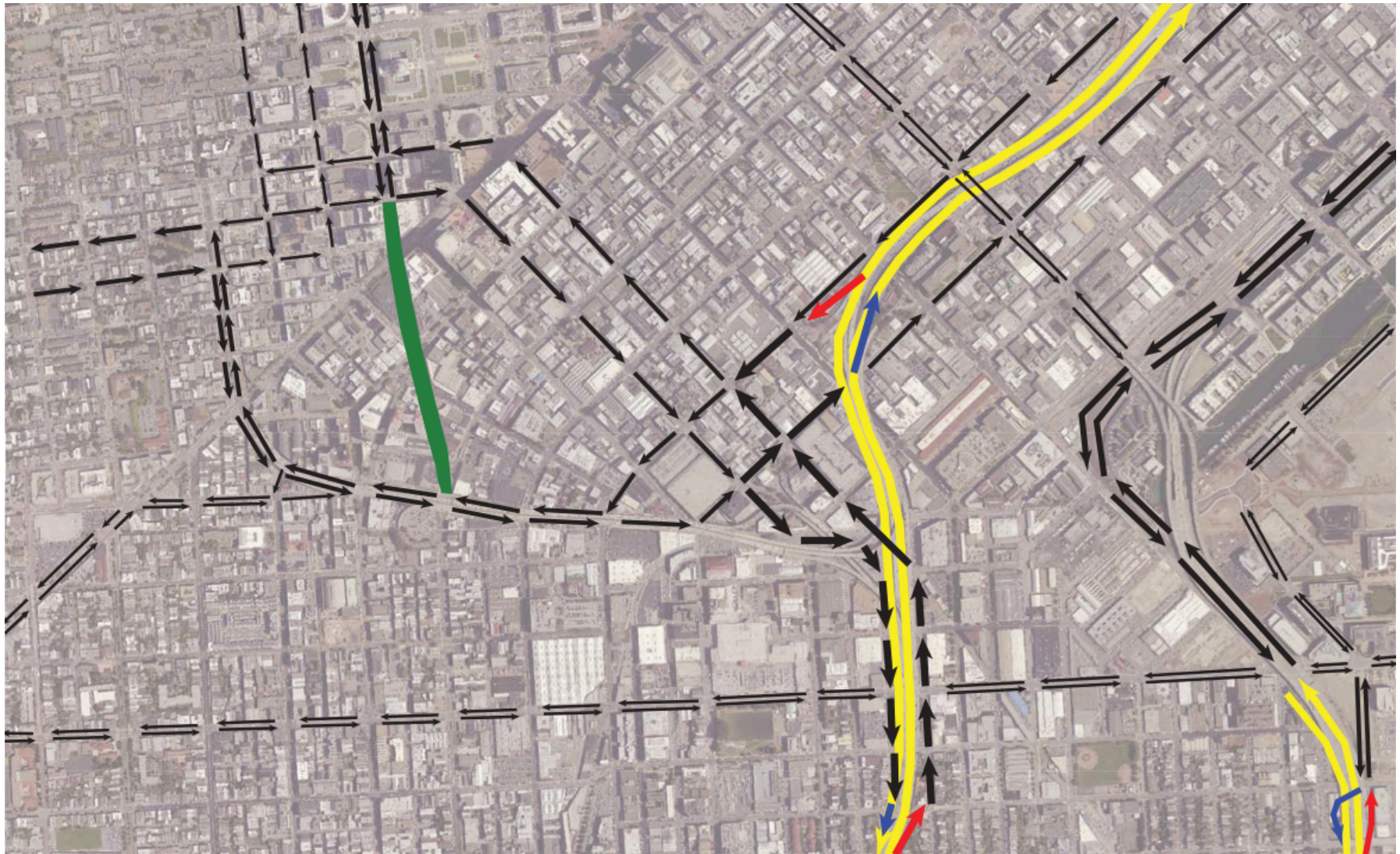


Figure 6: Unity Boulevard traffic plan. This figure also include the conceptual traffic plan from I-280 Boulevard project currently under study. Existing freeways to remain shown in yellow, with blue off-ramps and red on-ramps. Octavia Boulevard, the Ninth/Tenth one-way couplet and the Harrison/Bryant one-way couplet would remain as primary traffic routes. South Van Ness Avenue would be removed as a primary route and converted into open space.

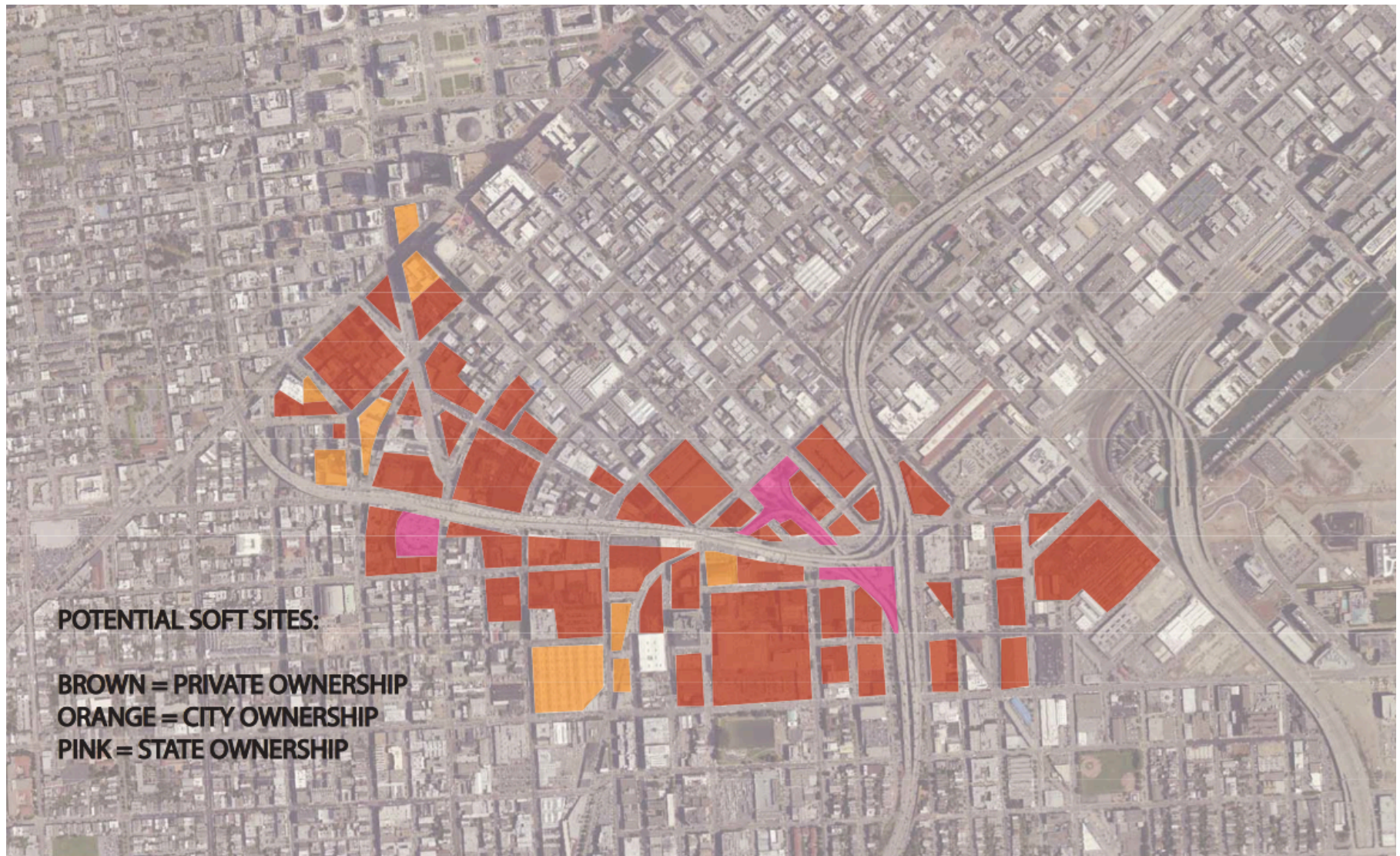


Figure 7: Potential soft sites along Unity Boulevard corridor. With upzoning of land uses along the corridor, many warehouse sites and parking lots would be ripe for new development. Value capture of private parcels and sale of public parcels would help finance the Unity Boulevard project.